

ORIGIN OF THE CRITERIA FOR THE VISIBILITY OF THE LUNAR CRESCENT IN MALAYSIA

Mohd Saiful Anwar Mohd Nawawi

University of Malaya, Kuala Lumpur, Malaysia.

Saadon Man

University of Malaya, Kuala Lumpur, Malaysia.

Mohd Zambri Mohd Zainuddin

International Islamic University Malaysia, Malaysia.

Abstract: The expected visibility (*imkan al-rukyah*) criteria have been applied to determine the first month of the Islamic calendar in Malaysia since 1984. This paper aims to investigate chronologically the process behind the decision to formulate the criteria, and provide an analysis of the official documents and interviews. This will be followed by a general overview of the development of such criteria in Malaysia. Based on its astronomical background, the authors suggest that the criteria were adopted from the Istanbul Resolution 1978 and formulated according to the reports produced by the Indonesian religious authorities concerning the sighting of the moon.

Keywords: crescent moon, calendar, elongation, moon's age and altitude.

Introduction

The Islamic calendar consists of 12 months, with each month being given a specific name starting from Muharram and ending with Zulhijjah. Generally, the Islamic calendar is used to determine 1 Ramadan, 1 Syawal and 10 Zulhijjah. In addition, there are other holy days in Islam that are directly related to the Hijri calendar. Among the holy days are 1 Muharram (Maalhijrah), 10 Muharram (Asyura), 27 Ramadan (Nuzul Al-Quran), and 9 Zulhijjah (Hari Arafah). Therefore, the Hijri calendar is directly linked to the religious, social and economic activities of the nation, in general, and the Muslim community, in particular.

Since 1984, Malaysia adopted the criteria called *imkanurukyah*. *Imkanurukyah* is an Arabic term, which means "expected" visibility. These criteria establish the rule of minimum conditions of visibility. The crescent moon is considered seen when the calculation fulfils one of the following requirements:

- a. During sunset
 - i. The altitude is not more than 2° ,
AND
 - ii. The elongation of the moon-sun is not more than 3° .
OR
- b. During the moonset
The age of the moon is not less than 8 hours.

Hence, research needs to be undertaken to investigate the origins of the criteria for the visibility of the lunar crescent to determine whether or not the selection criteria are scientifically justified. Therefore, this paper aims to investigate chronologically the process of formulating the criteria.

The origin of the eight (8) hour criterion

In November 1978, the International Conference for Determining the Beginnings of Lunar Months was held in Istanbul. One the resolutions agreed upon at this

Conference is that the crescent can be considered to be seen when one of the following conditions is fulfilled: Firstly, the position of the sun and the moon during sunset is not less than 8°. Secondly, the altitude of the crescent moon during sunset should not be less than 5°. Malaysia sent three representatives to the Istanbul Conference – Md. Khair Md. Taib. (*ahl falak*); a professor from the Technology University, Abdul Hamid Mohd Tahir; and the Mufti of Kuala Lumpur, Mohsein Salleh. At the Conference, Md. Khair Md. Taib suggested that the Istanbul Resolution should include a third requirement to determine the visibility of the lunar crescent, that is, the age of the crescent must not be less than 8 hours after conjunction. This can be found in the following evidence. Firstly, Based on Md. Khair's writings (1987), he inserted another resolution to the 1978 Istanbul Conference, which adds the requirements for the age of the 8-hour moon. Secondly: His statement on July 1987 at an Islamic Astronomy Conference in discussing the crescent moon from the syariah perspective. To him, in marking the beginning of the fast, the religious council has chosen one of the three formulations from the Istanbul resolution, 1978, which states that the crescent moon period must occur eight hours or more before sunset on the observation day. Thirdly, in his letter dated 12 May 1983 to the Director of the Muslim Centre, Kuala Lumpur, Md. Khair Md. Taib referred to the same matter. However, his fellow representative to the Istanbul conference, Abdul Hamid Mohd Tahir did not suggest the inclusion of the third resolution. After his return from Istanbul, Abdul Hamid Mohd Tahir held a talk on the Resolution. Abdullah Ibrahim, the President of the Malaysian Islamic Astronomy Society, reported that Abdul Hamid Mohd Tahir only talked about the two resolutions and did not mention the third resolution, as suggested by Md. Khair Md. Taib.

Furthermore, Abdul Hamid Mohd Tahir (1991) is consistent on this matter in his writings. According to Abd. Majid Abd. Hamid, who, together with Md. Khair Md. Taib, was a member of the committee that determines the beginning of the fasting month and Eid in 1983, the requirement to determine the visibility of the moon 8 hours after conjunction is the personal view of Md. Khair Md. Taib. This is based on the fact that the human eye may be able to see the crescent moon after 8 hours. Given the above evidence, we are convinced that the 8-hour criterion is the personal view of Md. Khair Md. Taib.

The origin of altitude 2° and elongation 3° Criteria

After the 1978 Istanbul resolution, the development of the determination method of the beginning of the month had a significant impact. After that, the decision was achieved in the Committee for Marking early Ramadan and Syawal on 5 and 25 April 1983 that the crescent can be considered to be seen when one of the following conditions is fulfilled. Firstly, the position of the sun and the moon during sunset is not less than 7(½)°. Secondly, the altitude of the moon during sunset is not less than 5(½)°. Thirdly, the age of the crescent moon must not be less than 8 hours after conjunction. In 1983, polemics arose in certain parts of Malaysia during the process of applying these criteria. For example, the states of Perak and Johor set the date of early Ramadan 1403 for 12 June 1983, while the rest of the country set it for 13 June. Consequently, in order to solve this issue, on 14 December 1989, the Department of Muslim Affairs, under the Prime Minister's Office formed a revision committee and appointed Abd Majid Abd Hamid as its chairman. It was agreed that the requirement pertaining to the visibility of lunar crescent in Malaysia was not really appropriate and that it would cause dispute among the Muslims. The tasks of the committee, among others, included:

First, re-examining the 1978 Istanbul Resolution on the crescent moon. The committee found that the 1978 Istanbul criteria was not applicable in Malaysia because of the different geographical latitudes, which were based on the findings of

a French astronomer, Danjon (1932), and the data provided by the Kandili observatory, Turkey.

Second, the committee collected and examined the records of the moon sightings, which included the records of Haron Din (1983), and Rasli Ramin (1981), and the documents from the Islamic Astronomy Conference (1987). From these documents and records, the committee ascertained that the data for the crescent moon sightings were not complete.

Third, because of the incomplete records of the crescent moon observations, since 1972, observations were conducted by the Department of Religious Affairs (Jabatan Agama Islam), Department of Survey and Mapping Malaysia, members of the Islamic Astronomy Committee and revision committee in 15 different places around Malaysia. The research period was only seven months (six months of observation and one month of analysis), observation started from the end of Jamadil Akhir 1411 (15-16 January 1991) to the end of Zulkaedah 1411 (12-13 Jun 1991). The results of the observation over 6 months was only from the Pantai Rombang site in Melaka. The results show that under the 1978 Istanbul criteria, the height of the crescent moon during sunset was $4^{\circ} 46'$, whereas the altitude of the observed crescent moon was $1^{\circ} 43'$. The age of the moon when the sun set on that day was 15 hours 39 minutes.

Fourth, looking at the scant observation data concerning the crescent moon in Malaysia, the committee considered that it was necessary to obtain the observational data from a neighbouring country. Indonesia was chosen because it reported that it possessed data on the sightings of the new moon. The committee visited Indonesia, specifically Jakarta and Bandung, the Religious Department, and the Indonesian Ulama's Council (MUI), the committee involved with the observation of the crescent moon in Pelabuhan Ratu and Klander, Jakarta. As a result, they found 29 data including reports on sightings in Indonesia between 1964 and 1990. After examination, only 12 data were recognized by the revision committee, which is provided in Table 1.

Table 1: Data of new moon sightings in Indonesia recognized by the Revision Committee.

Observation Places	Date	Moon Altitude	Elongation	Moon Age (hour)
Pelabuhan Ratu	11.8.80	$5^{\circ} 49'$	$5^{\circ} 54'$	16:47
Lombok	11.8.80	$5^{\circ} 32'$	$5^{\circ} 34'$	16:06
Jakarta	31.7.81	$2^{\circ} 16'$	$2^{\circ} 18'$	8:04
Jakarta	31.7.81	$2^{\circ} 16'$	$2^{\circ} 18'$	8:04
Pelabuhan Ratu	11.6.83	$1^{\circ} 52'$	$1^{\circ} 55'$	6:08

Pelabuhan Ratu	29.6.84	2° 17'	3° 57'	7:31
Jakarta	29.6.84	2° 19'	3° 56'	7:32
Jakarta	28.5.87	5° 54'	9° 07'	19:32
Pelabuhan Ratu	28.5.87	5° 50'	9° 07'	19:31
Banda Aceh	18.2.88	9° 54'	10° 06'	19:58
Pelabuhan Ratu	3.7.89	1° 25'	3° 46'	5:52
Banda Aceh	25.4.90	1° 26'	6° 02'	7:19

Source: Qouted from the research visit report on Hilal in Indonesia by the Revision Committee of the Beginning of Ramadan and Syawal BAHIES, Prime Minister's Office on 10-16 March 1991.

From the research of the revision committee, in a meeting on 4 November 1991, suitable criteria were proposed for application in Malaysia along with the approval from the committee who determined early Ramadan and Syawal. The requirements are as follows:

The crescent moon is considered seen when the calculations fulfil ONE of the following requirements:

- a. During sunset
 - i. The altitude of the crescent moon is not more than 2°,
AND
 - ii. The elongation of the moon-sun is not more than 3°.
OR
- b. During the moonset
 - i. The age of the moon is not less than 8 hours

How is the criteria decided based on the above data? What are the methodologies applied? According to Abd. Majid Abd. Hamid, the criteria were decided based on the age of the 8-hour moon as proposed by Md. Khair Md Taib. From here, the data of its altitude and elongation is compatible with the age of the 8-hour moon. According to Abd Majid Abd Hamid, the guide for the formulation of the criteria was based on the case confirmation in the court. Based on that, some matters can be considered as occurring if there is history that proves its occurrence. The same condition applies to the formulation of the criteria of the crescent moon. What is the minimum elongation and altitude value achieved if the age of the crescent moon is 8 hours? Therefore, the values of 2° and 3° were achieved before and were almost compatible with the age of the 8-hour moon. Hence, the criteria are taken as the measurement in the formation of the *imkanrukyah* criteria. As a result, in 1995, the *imkanrukyah* criteria, as mentioned above, were applied to mark the beginning of each month in the Hijri calendar in Malaysia.

Conclusion

From the preceding discussion, we suggest that these criteria were adopted from the Istanbul Resolution 1978 and formulated based on the reports of moon sightings produced by the Indonesian religious authorities. It is also evident that the 8 hours after conjunction was originally suggested by Md. Khair Md. Taib. This criterion does not fit the astronomical criteria for the visibility of the lunar crescent. Although these criteria, which have been applied for the past 20 years, have sustained the religious co-existence in Malaysia, they need to be re-examined to make them compatible with the astronomical criteria for the minimum visibility of the lunar crescent.